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N82-23080

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National Space Science Data Center/
World Data Center A For Rockets and Satellites

82-10

DOCUMENTATION FOR THE
MACHINE-READABLE VERSION
OF THE FIRST SANTIAGO-PULKOV
FUNDAMENTAL STARS CATALOGUE
(SPF1 CATALOGUE)



MARCH 1982

DOCUMENTATION FOR THE MACHINE-READABLE VERSION
OF THE
FIRST SANTIAGO-PULKOVO FUNDAMENTAL STARS CATALOGUE
(SPF1 CATALOGUE)

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March 1982

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SECTION 1 - INTRODUCTION

The *First Santiago-Pulkovo Fundamental Stars Catalogue (SPF1)* contains right ascension observations of 1043 FK4 stars made during the period 1963 to 1968 with the Repsold Meridian Circle located at Cerro Calán Observatory in Chile. The FK4 stars were observed during series of observations of Southern Reference Stars (SRS) and Bright Stars (BS) international programs. Approximately 30 to 45 FK4 stars were measured during each 2- to 2-1/2-hour series, and included stars observed along the meridian between $+41^\circ$ and -90° in upper culmination and from -90° to -68° in lower culmination. The lower culmination observations are given in a separate table in the source reference; they are included in the second tape file of the computer version.

This document describes the machine-readable version of the *SPF1* catalogue as distributed by the Astronomical Data Center. It is intended to enable users to read and process the computerized catalogue without the problems and guesswork often associated with such a task. The source reference should be consulted for additional details regarding the measurements, instrument characteristics, reductions, construction of the quasi-absolute system of right ascension, and star positions in the catalogue.

SOURCE REFERENCE

Anguita, C., Carrasco, G., Loyola, P., Bedin, V. N., Naumova, A. A., Polojentsev, D. D., Polojentseva, T. A., Tavastsherna, K. N. and Zverev, M. S. 1975, *First Santiago-Pulkovo Fundamental Stars Catalogue (SPF1)*, *Publ. Dep. Astronomy, Univ. of Chile*, 2 (No. 6) 181.

SECTION 2 - TAPE CONTENTS

A byte-by-byte description of the contents of the catalogue is given in Table 1. Although the upper and lower culmination observations are contained in separate files of the computerized catalogue, the formats are identical and Table 1 applies to both. The suggested format specifications are for FORTRAN formatted read statements and can be modified depending upon individual programming and processing requirements. Since certain data fields are blank where data are missing (as noted in Table 1) some processing requirements will necessitate data transfer to a buffer where the fields can be checked for blanks before proceeding. (In this particular catalogue, the only data field containing blanks is for the quantity $\varepsilon_0 \cos \delta$, and the field is blank only when the number of observations N is unity; therefore, the data can be read with the FORTRAN format and used for calculations only when $N \neq 1$.) Alternate format specifications are given in parentheses.

Table 1. Tape Contents. *SPF 1* Catalogue.

| Byte(s) | Units | Suggested Format | Description |
|---------|-------|---------------------|--|
| 1- 7 | --- | A7 (7A1) | Number assigned to catalogue by the Centre de Données Stellaires, Strasbourg. The four-digit number is followed by a letter "A" (first file or "B" (second file) and the two-digit year of this edition. All records in this catalogue contain 1043A76 or 1043B76. |
| 8 | --- | 1X | Blank. |
| 9-12 | --- | I4 | Number in the FK4 catalogue (Fricke and Kopff 1963). |
| 13 | --- | 1X | Blank. |
| 14-15 | hours | I2 | Right ascension (α) for 1950.0 (approximate). |
| 16 | --- | 1X | Blank. |
| 17-18 | min | I2 | α |
| 19 | --- | 1X | Blank. |
| 20-22 | ° | I3 (A1, I2) | Declination (δ) for 1950.0 (approximate). Sign always in byte 20. |
| 23 | --- | 1X | Blank. |

Table 1. (continued)

| Byte(s) | Units | Suggested Format | Description |
|---------|-------|---------------------|---|
| 24-25 | ' | I2 | δ |
| 26 | --- | 1X | Blank. |
| 27-31 | sec | F5.3 | Correction to the FK4 right ascension in the instrumental system ($\Delta\alpha_1 = \alpha - \alpha_1$) for the mean epoch of the observations. Sign always in byte 27. |
| 32 | --- | 1X | Blank |
| 33-37 | sec | F5.3 | Correction to the FK4 right ascension in the FK4 system ($\Delta\alpha_{FK4} = \alpha - \alpha_{FK4}$) for the mean epoch of the observations. |
| 38 | --- | 1X | Blank. |
| 39-40 | --- | I2 | Number of observations N . If this number is 1, the following data field is blank. |
| 41 | --- | 1X | Blank. |
| 42-44 | sec | F3.3 | $\epsilon_\alpha \cos \delta$. Mean square error of the catalogue position, computed with the deviations of the observations from the mean. |
| 45 | --- | 1X | Blank. |
| 46-49 | years | F4.2 | Mean epoch of the observations - 1900. |

SECTION 3 - TAPE CHARACTERISTICS

The information contained in Table 2 is sufficient for a user to describe the internal and constant characteristics of the machine-readable SPFI files to a computer. Information easily varied from installation to installation, such as block size (physical record length), blocking factor (number of logical records per physical record), total number of blocks, tape density, number of tracks, and internal coding (EBCDIC, ASCII, etc.) is not included. These parameters should always be supplied if secondary copies of the catalogue are transmitted to other users or installations. Parameters for the two files are separated by commas.

Table 2. Tape Characteristics. SPFI Catalogue

| | |
|---------------------------------------|----------|
| NUMBER OF FILES | 2 |
| LOGICAL RECORD LENGTH | 49* |
| RECORD FORMAT | FB** |
| TOTAL NUMBER OF LOGICAL RECORDS | 1043, 82 |

* Same for both files

** Fixed block length (last block may be short)

SECTION 4 - REMARKS, MODIFICATIONS, ACKNOWLEDGMENTS, AND REFERENCES

The SPFL catalogue was received on magnetic tape from the Centre de Données Stellaires (CDS), Strasbourg. The data had been received on punched cards from the Astronomisches Rechen-Institut, Heidelberg and had been punched from a handwritten version (A. Fresneau, private communication). A check against the published catalogue (Anguita et al. 1975) revealed an extra record in the machine-readable version (FK4 #1121 with only one observation; the observation must have been removed before publication and has been deleted from the file) and one record having an incorrect FK4 number and displaced (this has been corrected), plus several stars whose right ascensions and declinations disagree by 1^m or $1'$ between the computer file and the published catalogue (these have not been changed since the right ascensions and declinations are only approximate and are not the principal data of the catalogue). The logical record length (LRECL) of the file received (the upper and lower culmination observations were on a single file) was 88 bytes (a card image plus 8-byte allowance for CDS identification number); since bytes 50-88 were always blank, LRECL was changed to 49 bytes to save storage space. The upper and lower culmination tables were separated into two files due to the fact that lower culmination observations are made at lower altitude and are often of lower accuracy than upper culmination observations.

ACKNOWLEDGMENTS

Appreciation is expressed to Dr. A. Fresneau of the CDS, Strasbourg, for preparing a handwritten format description of the CDS tape at my request, and to Dr. A. Gutiérrez-Moreno for sending the University of Chile publication required for comparison purposes.

REFERENCES

- Anguita, C., Carrasco, G., Loyola, P., Bedin, V. N., Naumova, A. A., Polojentsev, D. D., Polojentseva, T. A., Tavastsherna, K. N. and Zverev, M. S. 1975, *First Santiago-Pulkovo Fundamental Stars Catalogue (SPF 1)*, Publ. Dep. Astronomy, Univ. of Chile, 2 (No. 6) 181.
- Fricke, W. and Kopff, A. 1963, *Fourth Fundamental Katalog (FK4)*, Veröff. Astron. Rechen-Inst. Heidelberg, No. 10.

SECTION 5 - SAMPLE LISTING

The sample listing given on the following pages contains logical data records exactly as they are recorded on the tape. Groups of records from the beginning and end of each file are illustrated. The beginning of each record and bytes within the record are indicated by the column heading index across the top of each page (digits read vertically).

LISTING OF RECORDS FROM TAPE FILLS

TAPE FILE NAME: SANTIAGO-PULKRIVO I UC

RECORDS 1 TO 30

Tape File 23

RECORD LENGTH 4-J BYTES

INPUT VECTOR WT014

62
 HX
 HIX
 UDE
 LAV
 UEN
 CHE

[illegible]

| | | | | | | | | | | | | |
|--------|----|---------|----|----|----|-----|----|-------|-------|----|-----|------|
| RECORD | 1 | 1043A76 | 1 | 00 | 05 | +28 | 48 | -0013 | +0002 | 06 | 010 | 6504 |
| RECORD | 2 | 1043A76 | 3 | 00 | 06 | -46 | 01 | -0052 | -0057 | 06 | 009 | 6594 |
| RECORD | 3 | 1043A76 | 5 | 00 | 09 | -28 | 04 | -0015 | -0007 | 03 | 009 | 6603 |
| RECORD | 4 | 1043A76 | 6 | 00 | 09 | -35 | 24 | +0034 | +0028 | 05 | 008 | 6522 |
| RECORD | 5 | 1043A76 | 7 | 00 | 10 | +14 | 54 | -0046 | -0043 | 03 | 019 | 6825 |
| RECORD | 6 | 1043A76 | 10 | 00 | 17 | -65 | 09 | -0046 | +0002 | 05 | 004 | 6444 |
| RECORD | 7 | 1043A76 | 11 | 00 | 23 | -77 | 32 | -0201 | -0113 | 17 | 005 | 6523 |
| RECORD | 8 | 1043A76 | 13 | 00 | 27 | -04 | 13 | +0012 | +0007 | 07 | 007 | 6526 |
| RECORD | 9 | 1043A76 | 14 | 00 | 27 | -24 | 03 | -0055 | -0052 | 01 | | 6350 |
| RECORD | 10 | 1043A76 | 20 | 00 | 36 | +30 | 35 | -0037 | -0015 | 07 | 004 | 6478 |
| RECORD | 11 | 1043A76 | 23 | 00 | 41 | -57 | 44 | -0009 | +0007 | 13 | 006 | 6497 |
| RECORD | 12 | 1043A76 | 26 | 00 | 41 | -38 | 41 | +0064 | +0054 | 02 | 010 | 6527 |
| RECORD | 13 | 1043A76 | 27 | 00 | 44 | +23 | 59 | -0018 | -0007 | 06 | 010 | 6463 |
| RECORD | 14 | 1043A76 | 28 | 00 | 46 | +07 | 16 | +0018 | +0016 | 02 | 008 | 6426 |
| RECORD | 15 | 1043A76 | 30 | 00 | 47 | -10 | 54 | -0002 | -0007 | 01 | | 6572 |
| RECORD | 16 | 1043A76 | 31 | 00 | 46 | -75 | 11 | -0043 | +0045 | 03 | 025 | 6622 |
| RECORD | 17 | 1043A76 | 33 | 00 | 53 | +38 | 13 | -0014 | +0005 | 03 | 017 | 6599 |
| RECORD | 18 | 1043A76 | 34 | 00 | 53 | -69 | 47 | +0025 | +0098 | 02 | 038 | 6527 |
| RECORD | 19 | 1043A76 | 35 | 00 | 56 | -29 | 37 | -0004 | +0003 | 03 | 015 | 6564 |
| RECORD | 20 | 1043A76 | 37 | 01 | 01 | +01 | 05 | +0037 | +0031 | 02 | 022 | 6513 |
| RECORD | 21 | 1043A76 | 39 | 01 | 05 | -62 | 02 | -0048 | -0016 | 06 | 007 | 6505 |
| RECORD | 22 | 1043A76 | 40 | 01 | 06 | -10 | 26 | -0011 | -0016 | 01 | | 6553 |
| RECORD | 23 | 1043A76 | 42 | 01 | 06 | +35 | 21 | -0087 | -0066 | 01 | | 6353 |
| RECORD | 24 | 1043A76 | 43 | 01 | 08 | +29 | 49 | -0024 | -0010 | 04 | 013 | 6491 |
| RECORD | 25 | 1043A76 | 44 | 01 | 10 | -38 | 07 | +0014 | +0004 | 02 | 004 | 6512 |
| RECORD | 26 | 1043A76 | 45 | 01 | 16 | +27 | 00 | -0016 | -0003 | 05 | 013 | 6614 |
| RECORD | 27 | 1043A76 | 47 | 01 | 21 | -08 | 26 | +0032 | +0027 | 01 | | 6077 |
| RECORD | 28 | 1043A76 | 49 | 01 | 26 | -43 | 34 | +0027 | +0020 | 05 | 014 | 6448 |
| RECORD | 29 | 1043A76 | 50 | 01 | 28 | +15 | 05 | -0016 | -0013 | 02 | 004 | 6427 |
| RECORD | 30 | 1043A76 | 53 | 01 | 33 | -78 | 45 | -0174 | -0087 | 02 | 009 | 6558 |

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INDEX

[illegible]

RECORD LENGTH 49 BYTES

RECORD LENGTH 49 BYTES

71051R RESTON TUNING INPUT VOLSER

71051R RESTON TUNING INPUT VOLSER

| | | | | | | | | | | | | |
|--------|------|---------|------|----|----|-----|----|-------|-------|----|-----|------|
| RECORD | 1014 | 1043A76 | 1612 | 23 | 20 | -29 | 22 | -2912 | -0015 | 03 | 013 | 6530 |
| RECORD | 1015 | 1043A76 | 1613 | 23 | 22 | +32 | 06 | +0006 | +0027 | 03 | 001 | 6426 |
| RECORD | 1016 | 1043A76 | 1615 | 23 | 26 | +15 | 44 | -0030 | -0026 | 02 | 006 | 6352 |
| RECORD | 1017 | 1043A76 | 1616 | 23 | 32 | +39 | 57 | -0005 | +0013 | 10 | 008 | 6500 |
| RECORD | 1018 | 1043A76 | 1617 | 23 | 32 | -42 | 53 | +0047 | +0038 | 01 | | 6483 |
| RECORD | 1019 | 1043A76 | 1618 | 23 | 37 | -32 | 20 | +0002 | +0003 | 05 | 012 | 6518 |
| RECORD | 1020 | 1043A76 | 1620 | 23 | 39 | +01 | 30 | +0007 | +0003 | 08 | 006 | 6484 |
| RECORD | 1021 | 1043A76 | 1621 | 23 | 41 | -18 | 33 | +0001 | -0003 | 12 | 005 | 6516 |
| RECORD | 1022 | 1043A76 | 1623 | 23 | 45 | -03 | 02 | +0013 | +0008 | 11 | 006 | 6473 |
| RECORD | 1023 | 1043A76 | 1624 | 23 | 46 | -21 | 53 | -0012 | -0012 | 03 | 008 | 6502 |
| RECORD | 1024 | 1043A76 | 1625 | 23 | 50 | +10 | 40 | -0021 | -0019 | 04 | 010 | 6523 |
| RECORD | 1025 | 1043A76 | 1626 | 23 | 52 | -40 | 34 | +0010 | -0002 | 11 | 008 | 6488 |
| RECORD | 1026 | 1043A76 | 1628 | 23 | 54 | +22 | 22 | -0016 | -0004 | 11 | 008 | 6520 |
| RECORD | 1027 | 1043A76 | 1629 | 23 | 55 | +24 | 51 | -0016 | -0003 | 04 | 001 | 6466 |
| RECORD | 1028 | 1043A76 | 1655 | 00 | 13 | -88 | 38 | +0074 | +0103 | 03 | 007 | 6614 |
| RECORD | 1029 | 1043A76 | 1656 | 02 | 28 | -85 | 56 | -0068 | +0000 | 06 | 005 | 6560 |
| RECORD | 1031 | 1043A76 | 1657 | 02 | 38 | -88 | 22 | +0709 | +0759 | 07 | 009 | 6638 |
| RECORD | 1031 | 1043A76 | 1658 | 04 | 28 | -83 | 00 | +0038 | +0132 | 06 | 007 | 6558 |
| RECORD | 1032 | 1043A76 | 1659 | 05 | 39 | -84 | 48 | +0002 | +0087 | 16 | 004 | 6512 |
| RECORD | 1033 | 1043A76 | 1660 | 05 | 53 | -85 | 55 | -0258 | -0177 | 11 | 006 | 6546 |
| RECORD | 1034 | 1043A76 | 1661 | 07 | 05 | -86 | 57 | -0130 | -0021 | 10 | 006 | 6351 |
| RECORD | 1035 | 1043A76 | 1662 | 07 | 13 | -88 | 41 | -0549 | -0401 | 01 | | 6507 |
| RECORD | 1036 | 1043A76 | 1663 | 10 | 34 | -85 | 49 | -0120 | +0019 | 23 | 004 | 6464 |
| RECORD | 1037 | 1043A76 | 1664 | 10 | 59 | -84 | 19 | -0208 | -0091 | 12 | 005 | 6433 |
| RECORD | 1038 | 1043A76 | 1665 | 13 | 32 | -85 | 31 | -0540 | -0443 | 08 | 006 | 6491 |
| RECORD | 1039 | 1043A76 | 1666 | 15 | 31 | -84 | 13 | -0140 | -0058 | 11 | 006 | 6472 |
| RECORD | 1040 | 1043A76 | 1667 | 19 | 46 | -81 | 28 | -0046 | +0029 | 09 | 004 | 6442 |
| RECORD | 1041 | 1043A76 | 1668 | 20 | 31 | -84 | 14 | -0125 | -0063 | 09 | 005 | 6435 |
| RECORD | 1042 | 1043A76 | 1669 | 22 | 21 | -89 | 04 | +1581 | +1600 | 01 | | 6657 |
| RECORD | 1043 | 1043A76 | 1670 | 22 | 22 | -86 | 13 | -0021 | +0042 | 06 | 007 | 6432 |

